



User Manual

PCE-DRD / DRF / DRG Series | Refractometer



User manuals in various languages (français, italiano, español, português, nederlands, türk, polski, русский, 中文) can be found by using our product search on: www.pce-instruments.com

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1 Safety notes

Please read this manual carefully and completely before you use the device for the first time. The device may only be used by qualified personnel and repaired by PCE Instruments personnel. Damage or injuries caused by non-observance of the manual are excluded from our liability and not covered by our warranty.

- The device must only be used as described in this instruction manual. If used otherwise, this can cause dangerous situations for the user and damage to the meter.
- The instrument may only be used if the environmental conditions (temperature, relative humidity, ...) are within the ranges stated in the technical specifications. Do not expose the device to extreme temperatures, direct sunlight, extreme humidity or moisture.
- Do not expose the device to shocks or strong vibrations.
- The case should only be opened by qualified PCE Instruments personnel.
- Never use the instrument when your hands are wet.
- You must not make any technical changes to the device.
- The appliance should only be cleaned with a damp cloth. Use only pH-neutral cleaner, no abrasives or solvents.
- The device must only be used with accessories from PCE Instruments or equivalent.
- Before each use, inspect the case for visible damage. If any damage is visible, do not use the device.
- Do not use the instrument in explosive atmospheres.
- The measurement range as stated in the specifications must not be exceeded under any circumstances.
- Non-observance of the safety notes can cause damage to the device and injuries to the user.

We do not assume liability for printing errors or any other mistakes in this manual.

We expressly point to our general guarantee terms which can be found in our general terms of business.

2 Technical specifications

Model	Parameters	Measurement range	Refractive index
PCE-DRD 1	Salt content	0 ... 28 %	1.3330 ... 1.4200 nD
PCE-DRD 2	Salt content	0 ... 280 ‰	1.3330 ... 1.4200 nD
PCE-DRD 3	Salt content	0 ... 28,5 %	1.3330 ... 1.4200 nD
PCE-DRF 2	Acetic acid	0 ... 75 %	1.3270 ... 1.3770 nD
PCE-DRF 3	Calcium chloride	0 ... 41 %	1.3330 ... 1.4200 nD
PCE-DRF 4	Glycerine	0 ... 100 %	1.3330 ... 1.4740 nD
PCE-DRF 5	Hydrogen peroxide	0 ... 61 %	1.3330 ... 1.4650 nD
PCE-DRF 6	Potassium carbonate	0 ... 51 %	1.3330 ... 1.4650 nD
PCE-DRF 7	Potassium hydroxide	0 ... 21 %	1.3330 ... 1.3744 nD
PCE-DRF 8	Lithium hydroxide	0 ... 15 %	1.3330 ... 1.4641 nD
PCE-DRF 9	Methanol	0 ... 46 %	1.3330 ... 1.3290 nD
PCE-DRG 1	Magnesium chloride	0 ... 35 %	1.3330 ... 1.4650 nD
PCE-DRG 2	Sodium nitrate	0 ... 41 %	1.3127 ... 1.3870 nD
PCE-DRG 3	Ammonia	0 ... 35 %	1.3330 ... 1.3840 nD
PCE-DRG 4	Isopropyl alcohol	0 ... 81 %	1.3330 ... 1.4650 nD
PCE-DRG 5	Dimethylacetamide	0 ... 100 %	1.3270 ... 1.4472 nD
PCE-DRG 6	Dimethylformamide	0 ... 55 %	1.3260 ... 1.4039 nD
PCE-DRG 7	Dimethylformamide	0 ... 100 %	1.3260 ... 1.4320 nD
PCE-DRG 8	N-methyl-2-pyrrolidone	0 ... 100 %	1.3260 ... 1.4800 nD
PCE-DRG 9	Sodium hypochlorite	0 ... 18 %	1.3250 ... 1.4000 nD
PCE-DRG 10	Sodium hydroxide	0 ... 55 %	1.3250 ... 1.4410 nD
Resolution and accuracy of all refraction parameters			
Resolution		0.1 %	
Accuracy		±0.2 %	
Resolution and precision of the refractive index			
Resolution		0.0001 nD	
Accuracy		±0.0003 nD	
Temperature			
Range		0 ... 40 °C	
Resolution		0.1 °C	
Accuracy		±0.5 °C	
Temperature compensation		Automatic 10 ... 40 °C	

Further specifications	
Sampling rate	1 Hz
Sample quantity	0.2 ... 0.3 ml
Display	LCD
Automatic power-off	60 seconds
IP protection	IP65
Capacity	5 V DC / 500 mA
Operating conditions	0 ... 50 °C / 0 ... 95 % RH
Storage conditions	0 ... 50 °C / 0 ... 95 % RH
Dimensions	145 x 46 x 27 mm
Weight	115 g

3 Delivery scope

1 x refractometer

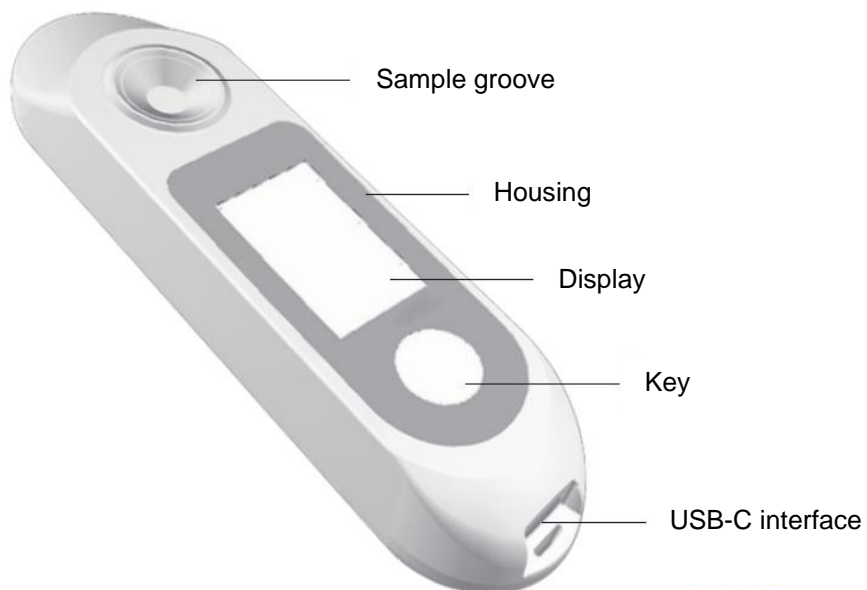
1 x pipette

1 x plastic case

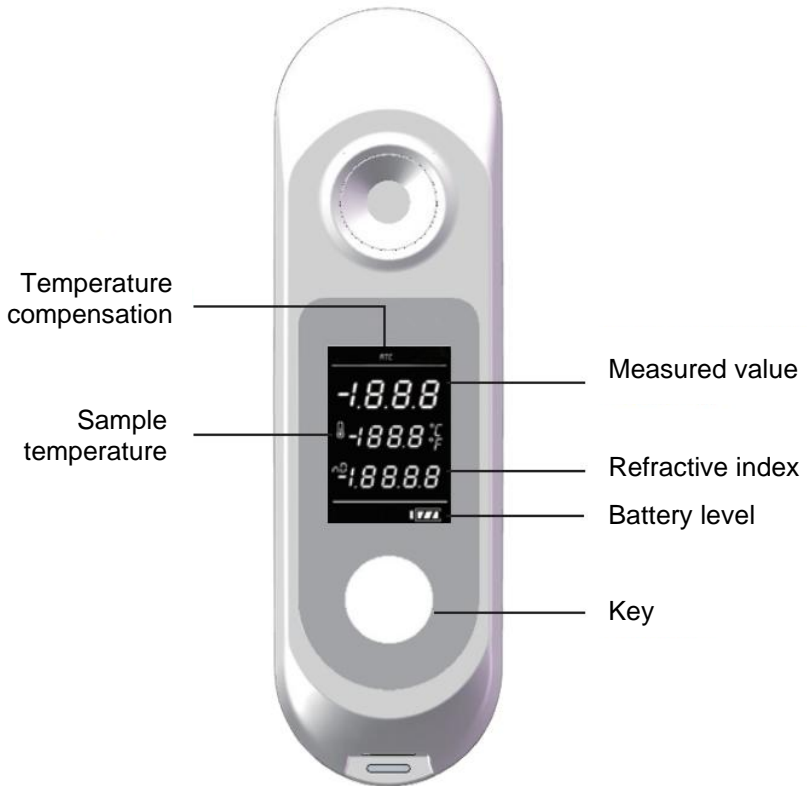
1 x USB-A - USB-C cable (for charging only, mains adaptor not included)

1 x user manual

4 Description



5 Display



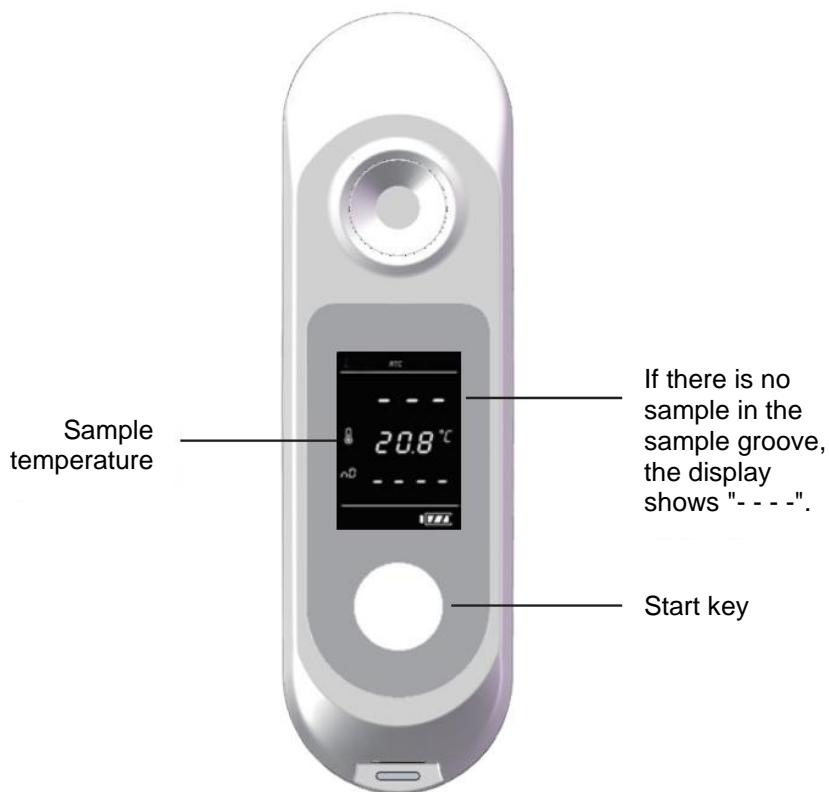
Note

Icon is displayed when the refractometer needs to be charged.

6 Measurement

6.1 Power on

Press the key to start the refractometer. After switching on, the device automatically starts a measurement.



6.2 Measurement

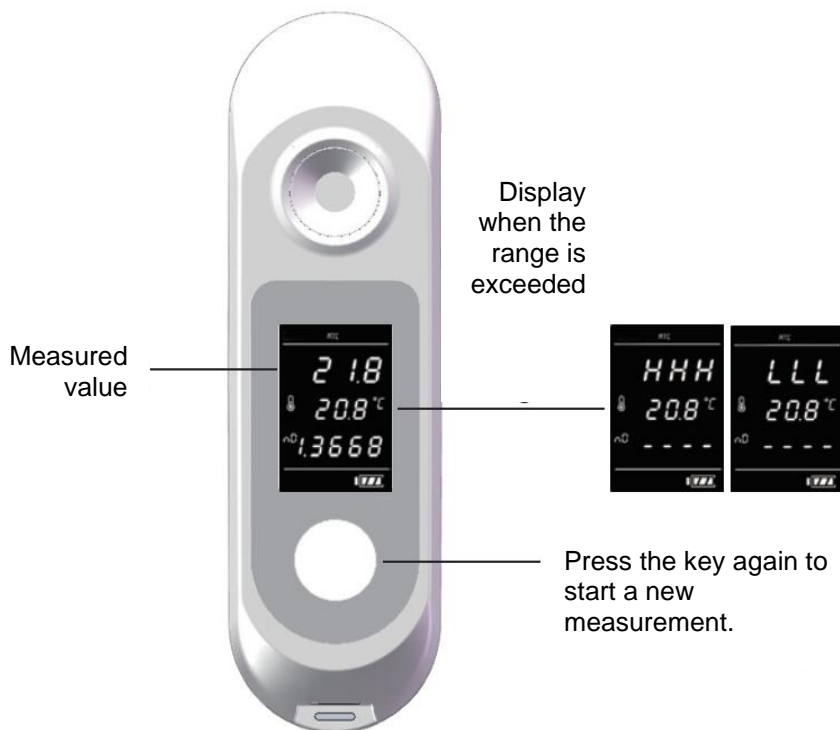
After switching on the refractometer, remove the previous sample and dry the sample groove.



Press the key again. The refractometer carries out a new measurement and displays the value on the screen.

Please note that the temperature is automatically compensated.

If the measurement range is exceeded, the display shows "H H H" if the upper range is exceeded and "L L L" if the lower range is exceeded.



Please note the following information:

1. If you use the refractometer outdoors, avoid bright light so as not to impair the accuracy of the measurement.
2. Before inserting the sample, clean the slit of the sample chamber thoroughly with a soft cloth or paper towel.
3. Keep the refractometer in a stable environment for the measurements.

6.3 Power off

The refractometer switches off automatically after 1 minute of inactivity.

7 Calibration

You can calibrate the refractometer with distilled water. The calibration method is as follows:

Add 0.2 - 0.3 ml of distilled water to the sample groove.

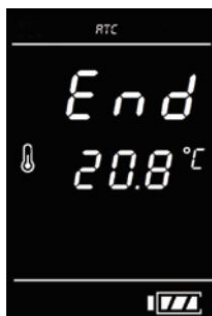


"YES" flashes on the display. Wait for confirmation

Press the key for about two seconds to call up the calibration menu.

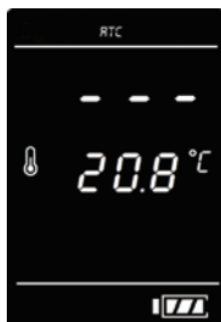
Press the key again to confirm the start of calibration.

Once the calibration process is complete, the display shows the following:



Note If you do not confirm the start of the calibration process with the key, the device returns to measuring mode after 10 seconds.

However, if the calibration process fails, the display shows how much is still missing:



8 Maintenance

Remove the sample at the end of a measurement, rinse the sample groove with water and dry it with a soft cloth or paper towel.



Store the refractometer in a dry place and do not expose it to direct sunlight. Moisture and high temperatures can damage the device.



Clean the refractometer carefully after each use and store it in its case.



9 Contact

If you have any questions, suggestions or technical problems, please do not hesitate to contact us. You will find the relevant contact information at the end of this user manual.

10 Disposal

For the disposal of batteries in the EU, the 2006/66/EC directive of the European Parliament applies. Due to the contained pollutants, batteries must not be disposed of as household waste. They must be given to collection points designed for that purpose.

In order to comply with the EU directive 2012/19/EU we take our devices back. We either re-use them or give them to a recycling company which disposes of the devices in line with law.

For countries outside the EU, batteries and devices should be disposed of in accordance with your local waste regulations.

If you have any questions, please contact PCE Instruments.



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